

-	1	degater and 29/729.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 08:59
-	1	degater and 29/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 08:59
-	3	degate and 29/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:00
-	10	degater	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:05
-	8	("4006879" "4221315" "4646954" "4741874" "5069832" "5165585" "5464343" "5865358").PN.	USPAT	2003/10/30 09:03
-	7	("2304899" "3161918" "3456301" "3479698" "3687591" "3767352" "3893644").PN.	USPAT	2003/10/30 09:03
-	0	"Degater having movable support pins"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:11
-	0	"Degater having movable support pins".ti.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:05
-	0	"Degater having movable support pins".bi.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:05
-	1	Degater and support near pins	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:06
-	190	Regala near Mariano.inv. and Piedad, Ruel .inv.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:07

-	1	Regala near Mariano.inv. and Piedad near Ruel .inv.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:07
-	1	Regala near Mariano.inv.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:07
-	1	Piedad near Ruel .inv.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:07
-	1	29/729.ccls. and mold and support and pin	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:18
-	496	29/729.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:21
-	0	29/729.ccls. and molding and degating	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 09:22
-	648	gate and molding and 29/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 11:01
-	0	gate and molding and 29/\$.ccls. and degater	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 11:01
-	18	gate and molding and 29/\$.ccls. and support near pins	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 11:07

-	40	("2361348" "2890505" "3473110" "3521158" "3932828" "3996510" "4000877" "4162138" "4377548" "4408159" "4419646" "4470786" "4564810" "4680543" "4829245" "4847557" "4849728" "4954307" "4959000" "5016343" "5018049" "5021737" "5036285" "5039942" "5049055" "5122046" "5133921" "5138292" "5147657" "5151277" "5182032" "5226221" "5240397" "5252051" "5278496" "5351388" "5376325" "5381089" "5418454" "5685884").PN.	USPAT	2003/10/30 11:03
-	8	molding near apparatus and 29/\$.ccls. and support near pins	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 11:17
-	6	("3962519" "3984600" "4607416" "4631307" "4656212" "4817252").PN.	USPAT	2003/10/30 11:09
-	10	("3257720" "3433450" "3986805" "4050666" "4341008" "4558504" "4628574" "4645446" "4661055" "4891002").PN.	USPAT	2003/10/30 11:10
-	10	("2330369" "2511079" "2531965" "2564615" "2759231" "3174189" "3197825" "3932085" "4162138" "4249882").PN.	USPAT	2003/10/30 11:12
-	7	("0391198" "2304984" "2655692" "3467986" "3471609" "3712575" "4017239").PN.	USPAT	2003/10/30 11:13
-	5	("Re32540" "3807045" "4535535" "4549651" "4816426").PN.	USPAT	2003/10/30 11:14
-	11	("Re32540" "4521469" "4525422" "4549651" "4552422" "4582556" "4618739" "4677526" "4688152" "4696526" "4706811").PN.	USPAT	2003/10/30 11:15
-	6	("3905777" "4017911" "4073999" "4156943" "4309488" "4374669").PN.	USPAT	2003/10/30 11:16
-	9	("2736585" "3495843" "3837660" "3875654" "4006210" "4166627" "4171561" "4239243" "4406847").PN.	USPAT	2003/10/30 11:17
-	11	molding near apparatus and 29/\$.ccls. and encapsulant	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/10/30 11:18

-	55	("4305897" "4554126" "4701999" "4769344" "4779835" "4784872" "4818204" "4862245" "4900485" "4908178" "4984059" "5071334" "5074779" "5108955" "5184208" "5218759" "5252853" "5286679" "5304842" "5318677" "5344795" "5366933" "5367196" "5369056" "5436203" "5440169" "5441684" "5442234" "5461255" "5470892" "5471366" "5530295" "5550711" "5592735" "5596231" "5598034" "5604376" "5626887" "5652461" "5675182" "5693984" "5719442" "5766982" "5793118" "5796160" "5801074" "5807768" "5891759" "5986336" "5989940" "5998243" "6001672" "6002173" "6107690" "6252308").PN.	USPAT	2003/10/30 11:20
-	10	("5077237" "5304512" "5447888" "5482896" "5668059" "5672550" "5710062" "5753538" "5817545" "5874324").PN.	USPAT	2003/10/30 11:21
-	55	("4305897" "4554126" "4701999" "4769344" "4779835" "4784872" "4818204" "4862245" "4900485" "4908178" "4984059" "5071334" "5074779" "5108955" "5184208" "5218759" "5252853" "5286679" "5304842" "5318677" "5344795" "5366933" "5367196" "5369056" "5436203" "5440169" "5441684" "5442234" "5461255" "5470892" "5471366" "5530295" "5550711" "5592735" "5596231" "5598034" "5604376" "5626887" "5652461" "5675182" "5693984" "5719442" "5766982" "5793118" "5796160" "5801074" "5807768" "5891759" "5986336" "5989940" "5998243" "6001672" "6002173" "6107690" "6252308").PN.	USPAT	2003/10/30 11:23
-	6	("4431047" "4714423" "5082615" "5336272" "5435953" "5460502").PN.	USPAT	2003/10/30 11:24

	Title	Current XRef	Retrieval Classif
1	Meth d and apparatus f r producing a plastic mold d chip card having r duc d wall thickness	264/272.17; 264/328.7	264/272.17
2	Method of reaction injection molding a valve	264/275; 264/278; 264/328.12; 264/328.6; 29/890.127; 425/129.1	425/129.1
3	Method of making an electronic module for a memory card and an electronic module thus obtained	257/695; 264/272.17; 438/124	264/272.17
4	Process for manufacturing semiconductor integrated circuit device, and molding apparatus and molding material for the process	257/E21.502; 264/272.11; 264/272.14; 264/272.17; 438/124	264/272.14; 264/272.17
5	Same-side gated process for encapsulating semiconductor devices	257/E21.504; 264/272.17; 264/328.12	264/272.17
6	Packaging of semiconductor chips	257/735; 257/E21.504; 257/E23.039; 264/272.15; 264/272.17; 29/844; 29/856; 438/123	264/272.17
7	Apparatus and method for producing semiconductor device	29/827; 438/124; 438/127	264/272.17
8	Method and apparatus for making a cable termination assembly	174/117F; 264/272.11; 264/272.14; 29/749; 425/110	264/272.14

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	Title	Current XRef	Retrieval Classif
9	Mold ass mbly for f rming a seal unit	264/266; 29/527.1; 425/129.1; 425/DIG.47	425/129.1
10	Seal mold and method	264/276; 29/527.4; 425/125; 425/544; 425/DIG.47; 425/DIG.5	425/544
11	Method for manufacturing a plastic encapsulated semiconductor device and a lead frame therefor	174/52.2; 174/52.4; 257/675; 257/796; 257/E21.504; 257/E23.044; 257/E23.124; 257/E23.126; 264/272.17; 428/572; 438/112; 438/122; 438/123	264/272.17
12	Apparatus and method for producing an insulated connection between electrical cables	156/245; 156/53; 174/84R; 249/95; 249/98; 264/272.13; 264/272.14; 264/272.15; 29/868; 403/269; 425/123	264/272.14

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	Title	Current XRef	Retrieval Classif
13	Casting plate straps and/or intercell connectors of electric storage batteries	164/303; 164/333; 164/344; 164/404; 164/DIG.1; 29/623.1; 425/123; 425/129.1; 425/DIG.51	425/129.1
14	METHOD OF MAKING PRINTED CIRCUIT BOARDS	156/150; 156/233; 174/263; 264/104; 264/255; 264/265; 264/272.17; 264/81; 361/748	264/272.17
15	APPARATUS FOR MAKING A MOLDED ELECTRICAL STRUCTURE	29/596; 425/129.1; 425/543; 425/548; 425/562; 425/577; 425/589; 425/812; 425/DIG.228	425/129.1
16	UNITIZED ASSEMBLY PLASTIC ENCAPSULATION PROVIDING OUTWARDLY FACING NONPLASTIC SURFACES	200/86R; 257/E21.504; 264/272.17; 29/527.1; 29/856	264/272.17

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DOCUMENT-IDENTIFIER: US 6286203 B1
TITLE: Method of installing wire harness
DATE-ISSUED: September 11, 2001

INVENTOR-INFORMATION:

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INT-CL: [07] H01R043/00

US-CL-ISSUED: 29/825, 29/854 , 29/857

US-CL-CURRENT: 29/825, 29/854 , 29/857

FIELD-OF-SEARCH: 29/33M; 29/428 ; 29/825 ; 29/854-59 ;
29/868 ; 29/462
; 29/869 ; 296/96.21

FOREIGN-PAT-NO	FOREIGN PATENT DOCUMENTS PUBN-DATE	COUNTRY
US-CL 1-212636	August 1989	JP

ART-UNIT: 379

PRIMARY-EXAMINER: Young; Lee

ASSISTANT-EXAMINER: Smith; Sean

detach from either the encapsulant bodies or from the substrates prior to the upper and lower degater halves separating from each other. If the excess encapsulant pieces are not fully detached, they will lift the electronic subassemblies off of the lower supports. Eventually, the excess encapsulant pieces will detach due to the weight of the subassemblies; however, the subassemblies can fall back onto the lower supports misaligned. Misalignment can cause problems during later stages of an automated fabrication process.

[0043] Another embodiment of the present invention includes a similar arrangement of degater system 20. However, instead of the upper and lower supports securing an electronic subassembly, the upper and lower supports secure the excess encapsulant pieces. Accordingly, the retainers would secure the subassemblies instead of the excess encapsulant pieces. Thereafter, the excess encapsulant pieces would be at least partially severed from the subassemblies by the supports pivoting in a similar manner as described above. When the upper degater half separates from the lower degater half, retainers would separate the subassemblies away from the excess encapsulant material. Contemporaneously, support pins would extend from the upper degater half and secure the excess encapsulant material against the lower supports, thus achieving the same benefits as described below.

[0044] While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely illustrative and not restrictive of the current invention, and that this invention is not restricted to the specified constructions and arrangements shown and described since modifications may occur to those ordinarily skilled in the art.

What is claimed is:

1. A degater comprising:

first and second degater halves which are movable relative to one another between a first position wherein the halves are adjacent to one another and a second position wherein the halves are separated, the halves, when in the first position, defining a space between them having separate volumes, one of the volumes being shaped to hold a subassembly including a first electronic component having an encapsulant formed thereon and the other volume being shaped to hold a subassembly including excess encapsulant, and the encapsulant being connected to and at least partially severable from the excess encapsulant while the subassemblies are in the volumes;

14 a retainer having a first portion secured to the first half and having a second portion securing a first of the subassemblies, and moving the first subassembly with the first half when the halves are moved from the first to the second position; and

15 a separator secured to the first half and having a first surface contacting a second of the subassemblies, the first surface moving away from the first half when the halves are moved from the first to the second position and biasing the second subassembly away from the first half toward the second half.

2. The degater of claim 1, wherein the excess encapsulant is at least partially severed from the encapsulant of the

electronic component when the halves are moved from the first position to the second position.

3. The degater of claim 1, wherein a surface of one of the halves includes a recess being shaped to receive at least a portion of one of the subassemblies when the halves are in the first position.

4. The degater of claim 1, wherein a surface of one of the halves includes aligning supports positioned to support one of the subassemblies when the halves are in the first and second positions.

5. The degater of claim 1, wherein the volumes are adjacent to one another.

6. The degater of claim 1, wherein the excess encapsulant includes a cull and a runner.

7. The degater of claim 6, wherein the encapsulant is formed on all sides of the electronic component.

8. The degater of claim 1, wherein the second portion of the retainer includes a surface that adhesively attaches to the first subassembly.

9. The degater of claim 8, wherein the second portion of the retainer is a suction cup.

10. The degater of claim 1, wherein the separator is a pin which is at least partially retracted into the first half when the halves are in the first position and is at least partially extended out from the first half when the halves are in the second position.

11. The degater of claim 1, wherein a first of the volumes includes the first subassembly, a second of the volumes includes the second subassembly, and a third of the volumes includes a third subassembly having a second electronic device with encapsulant thereon, the encapsulant of the second electronic device being secured to and partially severable from the excess encapsulant of the first subassembly.

12. The degater of claim 11, wherein the first volume is adjacent to the second and third volumes, and the second and third subassemblies are connected by the first subassembly.

13. The degater of claim 1, further comprising a hinge assembly securing the first half to the retainer, the hinge assembly having an axis, wherein the first half can pivot about the axis and relative to the retainer.

14. The degater of claim 1, further comprising a component with first and second portions, the first portion contacting a surface of the first half and the second portion contacting a second surface of the separator, the portions being biased relative to one another.

15. A degater comprising:

first and second supports mutually positionable relative to each other between a first position wherein the supports are adjacent to each other and a second position wherein the supports are separated from each other, the supports, when in the first position, defining a space between them having first, second, and third volumes, the first and second volumes being shaped to hold first and second electronic components respectively, each having encapsulant formed thereon, and the third volume being shaped to hold excess encapsulant, wherein the excess encapsulant attaches the first electronic component to the second electronic component;

a retainer having a first portion secured to the first support and a second portion in the shape of a cup adhesively secured to the excess encapsulant, and detaching the excess encapsulant from the encapsulant of the elec-

tronic components when the supports move from the first to the second position;

a plurality of support pins secured to the first support and having surfaces contacting the electronic components when the supports are in the first position, the surfaces extending from the first support and biasing the electronic components against the second support as the supports move from the first to the second position.

16. The degater of claim 15, wherein the first support has first and second portions, the first portion forming the first volume with the second support and the second portion forming the second volume with the second support.

17. The degater of claim 16, further comprising a hinge assembly securing the first and second portions of the first support to the retainer, the hinge assembly having first and second axes, wherein the first portion can pivot about the first axis and the second portion can pivot about the second axis.

18. A method for degating an encapsulated microelectronic device, comprising:

supporting and encapsulated microelectronic device having subassemblies at least partially severable from each other, one of the subassemblies including an electrical component with an encapsulant formed thereon and another of the subassemblies including excess encapsulant,

a first support supporting a first side of a first subassembly and a second support supporting a second side of the first subassembly such that the first and second supports are adjacent to one another and the first subassembly is secured therebetween;

securing a retainer, movable with one of the supports, to a second of the subassemblies;

at least partially detaching the first subassembly from the second subassembly;

separating the first and second supports away from each other, the retainer moving with one of the supports; and

biasing a first support member, secured to and movable relative to the first support, against the first subassembly and toward the first support while separating from the second support.

19. The method of claim 18, wherein the detaching includes pivoting the first and second supports, together as a unit, relative to the retainer.

20. The method of claim 19, wherein the excess encapsulant is at least partially severed from the encapsulant of the microelectronic device when the supports are separated from each other.

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